

CLAIMS

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A
1. Clinker-type hydraulic binder obtained through burning
comprising :
- a magnesian spinel mineralogical phase, and
- at least a calcium aluminate mineralogical phase with a lime content
of less than 15% of the binder by dry weight,

characterized in that the magnesian spinel comprises between 68% and 81% of the binder by dry weight.

10 the 2. Binder according to claim 1, characterized in that the calcium aluminates are essentially made of CA and CA₂, with C=CaO and A=Al₂O₃.

3. Binder according to claim 2, characterized in that the calcium aluminates CA and CA₂ comprise between 19% and 32% of the binder by dry weight.

4. Binder according to claim 3, characterized in that it comprises by dry weight of the binder, 71 ± 2% of magnesian spinel, 18 ± 2% CA and 11 ± 2% CA₂.

112 5. Binder according to any one of claims 1 to 4, characterized in that it is quasi-free from free residual MgO, at least as it can be observed on X-ray diffraction spectrum for the binder.

6. Binder according to any one of claims 1 to 5, characterized in that it has the following chemical composition by dry weight of the binder :

- lime CaO : 4 to 12%
- magnesia MgO : 19 to 23%
- alumina Al₂O₃ : 69 to 74%.

7. Binder according to claim 6, characterized in that it has the following chemical composition by dry weight of the binder :

- lime CaO : 8.4%
- magnesia MgO : 20.4%
- alumina Al₂O₃ : 71.2%.

8. Binder according to any one of claims 1 to 7, characterized in that it comprises a SiO₂ content of less than 0.5% of the binder by dry weight.

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9. Binder according to any one of claims 1 to 8, characterized in that it has a Blaine area surface at least equal to 3000 cm²/g.

112 → 10. Use of a binder according to any one of claims 1 to 9 for producing a refractory concrete.

5 11. Use of a binder according to claim 10, characterized in that the binder is complemented by magnesian spinel, preferentially of large size, so that the concrete contains between 20% and 30% of magnesian spinel by dry weight of the concrete.

10 12. Use of a binder according to claim 11, characterized in that the concrete is produced by mixing by dry weight of the binder :

- between 16 and 27% of the binder,
- between 2 and 13% of fine reactive alumina,
- between 0 and 19% of large spinel, and
- 112 - between 52 and 71% of alumina granulates,

15 and preferably :

- 18% of the binder
- 11% of reactive fine alumina,
- 11% of large spinel, and
- 60% of alumina granulates.

20 13. Use of a binder according to any one of claims 10 to 12, characterized in that it is used in the manufacture of steel ladles (1), preferably for wear linings (5) of such steel ladles (1).

112 14. Process for producing a binder according to any one of claims 1 to 9, characterized in that the binder is made through frittering by burning of a blend of raw materials comprising dolomite, alumina and magnesia.

25 15. Process according to claim 14, characterized in that dolomite is natural.

30 16. Process according to any one of claims 14 or 15, characterized in that alumina is metallurgical.

17. Process according to any one of claims 14 to 16, characterized in that magnesia is reactive, preferably caustic, and has advantageously a grain size 100% lower than 100 µm, preferably lower than 40 µm.

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18. Process according to any one of claims 14 to 17, characterized in that, before burning, the raw materials are milled up to a grain size corresponding to a 2% maximum rejection in a sieve of 65 μm .

19. Process according to any one of claims 14 to 18, characterized
5 in that burning is carried out at a temperature comprised between 1400°C and 1600°C.

20. Process according to any one of claims 14 to 19, characterized in that the degree of progression of the burning is evaluated by measuring the free magnesia content by dry weight of the mixture.

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